

REMARKS

Applicant intends this response to be a complete response to the Examiner's **12 June 2007** Final Office Action. Applicant has labeled the paragraphs in his response to correspond to the paragraph labeling in the Office Action for the convenience of the Examiner.

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

The Examiner states as follows:

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office Action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 October 2007 has been entered.

Applicant acknowledges the statements of the Examiner.

Response to Amendment

The Examiner states as follows:

2. Examiner acknowledges Applicant's response filed 12 October 2007 containing amendments to the claims and remarks.
3. Claims 1-35 are pending.
4. The previous rejections of claims 2 and 19 under 35 U.S.C. 112, first paragraph are withdrawn in view of Applicant's arguments and amendment to the claims.
5. The previous rejections of claims 1-27 under 35 U.S.C. 102(b) and/or 35 U.S.C. 103(a) are withdrawn in view of Applicant's arguments.
6. The previous rejections of claims 28-35 under 35 U.S.C. 102(b) are maintained.
7. New grounds for rejection of claims 1-27 under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) are entered in view of newly discovered prior art. The rejections follow.

Applicant acknowledges the statements of the Examiner.

Claim Rejections - 35 USC § 102 / 35 USC § 103

10. **Claims 1-27** stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yon-Hin (EP 0882778 A2).

The Examiner contends as follows:

11. With respect to claims 1 and 18, Yon-Hin discloses contacting a fluid including noxious

sulfur-containing species with an effective amount of a sulfur scavenging composition comprising substantially monomeric aldehyde-amine adducts formed from a reaction of a molar excess of an aldehyde or aldehyde donor and a secondary amine having at least one sterically bulk substituent (see Yon-Hin, page 4, Example 1).

Applicant respectfully disagrees with the Examiner. Yon-Hin does not disclose a aldehyde-amine adduct comprising a reaction of a single aldehyde and a single amine. In fact, the simplest Yon-Hin composition:



This compositions includes is not an adduct of a single aldehyde and a single amine and is not a monomeric adduct as set forth in the present application. The Yon-Hin compositions comprise two amine groups linked together by two or more aldehyde derived units, *i.e.*, CH_2O and CH_2 . These two moieties are derived from the paraformaldehyde used in the synthesis. In example 1, Yon-Hin states that the NMR is consistent with compounds with $n=1, 2$ and 3 . Again, each CH_2O as well as the CH_2 moieties are derived from the paraformaldehyde. Thus, Yon-Hin relates to composition comprising two amines linked together by at least two aldehyde derived units. Yon-Hin does not disclose a composition including monomeric aldehyde-amine adducts derived from a reaction of a single aldehyde and a single amine. Even when diamine or polyamines are used in the preparation of the compositions of this invention, the resulting compositions include a single amine group reacted with a single aldehyde group so that each amino group is bonded to three different groups, where two the groups can form a ring system.

The distinction is also apparent in the formulas. Formula (II) of this invention clearly shows a diamine reacted with two moles of aldehyde so that each N nitrogen atom of the diamine bears a three groups, one group derived from the aldehyde $R-CHO$. In the Yon-Hin formula, the compounds are adducts where two amines are linked together via oligomers of paraformaldehyde.

Because Yon-Hin does not disclose or even suggest a composition comprising monomeric adducts of a single aldehyde of the formula $RCHO$ and a single amino group of the amines, Yon-Hin cannot anticipate nor render the present claims obvious. Applicant, therefore, respectfully requests withdrawal of this rejection.

Applicant would like to clarify an incorrect comment make in a previous office action, the present compositions can use a primary amine having a bulky substitute or a secondary amine, but the secondary amine can include a bulky substitute or not. Applicant's attorney simply miss spoke in the response. Applicant would also point that the amendments are not narrowing amendments as

they simply clarify the nature of the adducts that were disclosed in the application and are being currently claimed.

The Examiner contends as follows:

12. With respect to claims 2-6, 19, and 23-26, Yon-Hin discloses the use of aldehyde and amine species to produce a sulfur scavenging composition (see Yon-Hin, page 4, Example 1; page 3, lines 12-58; and page 4, lines 1-8).

Again, the problem with Yon-Hin is in the structure of the scavenger. Yon-Hin simply does not disclose the compositions of this invention. The Yon-Hin scavenger are prepared by reaction a secondary amine with paraformaldehyde to form a diamine structure, where the amino groups are linked together via an oligomer of formaldehyde derived groups. This is exactly the opposite of the teaching of this invention, where oligomeric products are specifically avoided, especially products having an oligomer derived from the aldehyde. Because Yon-Hin does not disclose or even suggest a composition comprising monomeric adducts of a single aldehyde of the formula $RCHO$ and a single amino group of the amines, Yon-Hin cannot anticipate nor render the present claims obvious. Applicant, therefore, respectfully requests withdrawal of this rejection.

The Examiner contends as follows:

13. With respect to claims 7 and 27, Yon-Hin discloses wherein the composition comprises a solution including a quantity of adducts and the remainder a solvent (see Yon-Hin, page 4, Example 1).

Again, the problem with Yon-Hin is in the structure of the scavenger. Yon-Hin simply does not disclose the compositions of this invention. The Yon-Hin scavenger are prepared by reaction a secondary amine with paraformaldehyde to form a diamine structure, where the amino groups are linked together via an oligomer of formaldehyde derived groups. This is exactly the opposite of the teaching of this invention, where oligomeric products are specifically avoided, especially products having an oligomer derived from the aldehyde. Because Yon-Hin does not disclose or even suggest a composition comprising monomeric adducts of a single aldehyde of the formula $RCHO$ and a single amino group of the amines, Yon-Hin cannot anticipate nor render the present claims obvious. Applicant, therefore, respectfully requests withdrawal of this rejection.

The Examiner contends as follows:

14. With respect to claims 8-17, Yon-Hin discloses wherein the fluid is *any* hydrocarbon stream (see Yon-Hin, Abstract; page 2, lines 3-5; and page 4, lines 9-13).

Again, the problem with Yon-Hin is in the structure of the scavenger. Yon-Hin simply does not disclose the compositions of this invention. The Yon-Hin scavenger are prepared by reaction a secondary amine with paraformaldehyde to form a diamine structure, where the amino groups are linked together via an oligomer of formaldehyde derived groups. This is exactly the opposite of the teaching of this invention, where oligomeric products are specifically avoided, especially products having an oligomer derived from the aldehyde. Because Yon-Hin does not disclose or even suggest a composition comprising monomeric adducts of a single aldehyde of the formula $RCHO$ and a single amino group of the amines, Yon-Hin cannot anticipate nor render the present claims obvious. Applicant, therefore, respectfully requests withdrawal of this rejection.

The Examiner contends as follows:

15. With respect to claims 20-22, Yon-Hin discloses wherein the adding step may be continuous, intermittent, or periodic (see Yon-Hin, page 4, lines 13-16; and Example 4).

Again, the problem with Yon-Hin is in the structure of the scavenger. Yon-Hin simply does not disclose the compositions of this invention. The Yon-Hin scavenger are prepared by reaction a secondary amine with paraformaldehyde to form a diamine structure, where the amino groups are linked together via an oligomer of formaldehyde derived groups. This is exactly the opposite of the teaching of this invention, where oligomeric products are specifically avoided, especially products having an oligomer derived from the aldehyde. Because Yon-Hin does not disclose or even suggest a composition comprising monomeric adducts of a single aldehyde of the formula $RCHO$ and a single amino group of the amines, Yon-Hin cannot anticipate nor render the present claims obvious. Applicant, therefore, respectfully requests withdrawal of this rejection.

16. Claims 28-35 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Weers (EP 0475641 A1).

The Examiner contends as follows:

17. With respect to claims 28 and 29, Weers provides an inherent disclosure for contacting a sulfur scavenging composition *in a container*. Weers does not explicitly disclose use of a "container." Nevertheless, the person having ordinary skill in the art would recognize from Weers' disclosure that use of some sort of container is necessary to hold the sulfur-containing hydrocarbon to be treated by the sulfur scavenging composition. Likewise, the person having ordinary skill in the art would recognize that the sulfur scavenging composition could be added (or "contacted") with the hydrocarbon either prior to, after, or at the same time as adding the hydrocarbon to the "container."

Applicant respectfully disagrees with the Examiner as it pertains to the application of the

19. With respect to claim 31, Weers discloses contacting a sulfur scavenging composition with a hydrocarbon containing hydrogen sulfide (see Weers, page 5, lines 53-54).

Applicant respectfully disagrees with the Examiner as it pertains to the application of the Weers reference to the present invention. While Weers discloses a method for treating, Weers does not disclose the compositions of this invention. The Weers compositions are all imines and not amines. The present invention are amines and the reaction conditions are specifically designed to result in the formation of monomeric aldehyde-amine adducts comprising a reaction of a single aldehyde with each amino group of the amine so that each amino nitrogen atom is bonded to three different group, two of which can form part of a ring system. In fact, Weers does not even suggest the compositions as claimed at none of these compositions are imines.

Because the compositions are novel and non-obvious over Weers, the method of using the compositions of this invention is novel and non-obvious over Weers as has been clearly set forth in Federal Circuit Case law. See *In re Brouwer*, 37 USPQ 2d 1663 (Fed. Cir. 1995) and *In re Ochiai*, 37 USPQ2d 1127 (Fed. Cir. 1995). Applicant, therefore, respectfully requests withdrawal of this rejection.

The Examiner contends as follows:

20. With respect to claims 32-34, Weers provides an inherent disclosure for introduction of a sulfur scavenging composition via a chemical tool, coiled tubing, or capillary coiled tubing (CCT). Weers does not provide an explicit disclosure for the means by which the sulfur scavenging composition is added to the sulfur-containing hydrocarbon to be treated. Nevertheless, the person having ordinary skill in the art would recognize that any suitable means could be used, be it by pouring (i.e. "batch introducing step"), by pumping the composition through a pipe, or other "chemical tool," "coiled tubing," or "capillary coiled tubing (CCT)."

Applicant respectfully disagrees with the Examiner as it pertains to the application of the Weers reference to the present invention. While Weers discloses a method for treating, Weers does not disclose the compositions of this invention. The Weers compositions are all imines and not amines. The present invention are amines and the reaction conditions are specifically designed to result in the formation of monomeric aldehyde-amine adducts comprising a reaction of a single aldehyde with each amino group of the amine so that each amino nitrogen atom is bonded to three different group, two of which can form part of a ring system. In fact, Weers does not even suggest the compositions as claimed at none of these compositions are imines.

Because the compositions are novel and non-obvious over Weers, the method of using the compositions of this invention is novel and non-obvious over Weers as has been clearly set forth in

Federal Circuit Case law. See *In re Brouwer*, 37 USPQ 2d 1663 (Fed. Cir. 1995) and *In re Ochiai*, 37 USPQ2d 1127 (Fed. Cir. 1995). Applicant, therefore, respectfully requests withdrawal of this rejection.

The Examiner contends as follows:

21. With respect to claim 35, Weers discloses a sulfur scavenging composition comprising a solution including from about 5 wt.% to about 50 wt.% of the adducts, the remainder being a solvent (see Weers, page 5, lines 57-58).

The Weers compositions are not the compositions of this invention. The Weers composition are prepared from amines that include at least one primary amine group and not from amines that are secondary amines. Second, the present invention are not imines as specifically taught by Weers. The present scavengers are amine aldehyde-amine adducts and not imine aldehyde-amine adducts as specifically taught by Weers.

Because Weers does not disclose or even suggest preparing compositions comprising monomeric aldehyde-amine adducts, where the resulting compounds are amines and not imines and where the starting amine is a secondary amine, Weers cannot anticipate or render the present claims obvious. Applicant, therefore, respectfully requests withdrawal of these section 102(b) rejection over Weers EP.

Response to Arguments

The Examiner states as follows:

22. Applicant's arguments filed 12 October 2007 have been fully considered but they are not persuasive.

23. Examiner notes that Applicant's arguments with respect to claims 1-27 are moot in view of the new grounds of rejection.

24. With respect to claims 28-35, Examiner understands Applicant's principal argument to be:

- I. The method of claims 28-35 is novel and non-obvious over Weers (EP 0475641 A1) because the compositions (as claimed by Applicant) are novel and non-obvious over Weers.
- II. The CAFC has made it clear that a method practiced with a patentable composition is per se patentable.

25. With respect to Applicant's first argument, Examiner notes that independent claims 28 and 31 do not incorporate all the limitations of independent claims 1 and/or 18. Specifically, Examiner notes that claims 1 and 18 as currently amended specify the reaction of an "aldehyde or aldehyde donor" and a "secondary amine" (emphasis added). In contrast, claims 28 and 31 merely specify the reaction of an "aldehyde or aldehyde donor" and "at least one amine." Thus, claims 28 and 31 do not require the amine to be a secondary amine. In this regard, Examiner notes that Weers discloses the use of secondary amines (see Weers, page 4, lines 21-22). Therefore, Applicant's argument is unpersuasive because the patentability of neither the composition nor the method for using the composition has been

established.

26. With respect to Applicant's second argument, the argument is moot because patentability of neither the composition nor the method for using the composition has been established. Moreover, Applicant does not cite any Federal Circuit case law to support such an argument.

Applicant believes that he has now fully differentiated the present claims over the cited references and respectfully urges that the application be passed onto allowance.

The Commissioner is authorized to credit or debit deposit account no. 501518 for any fees due or overpayments made.

If it would be of assistance in resolving any issues in this application, the Examiner is kindly invited to contact applicant's attorney Robert W. Strozier at 713.977.7000

Date: **March 6, 2008**

Respectfully submitted,



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